

REMARKS

Please reconsider the present application in view of the above amendments and the following remarks. Applicant thanks the Examiner for indicating that claims 3-5 and 7-10 contain allowable subject matter.

At the outset, Applicant respectfully requests that the Examiner accept the drawings submitted on May 19, 2003. Applicant submits that these drawings are formal.

Disposition of Claims

Claims 1-18 are pending in the present application. Claims 2 and 11 are independent. The remaining claims depend, directly or indirectly, from claims 2 and 11.

Claim Amendments

Claim 2 has been rewritten in independent form to include the limitations of claim 1 and to clarify that a shifting switch selects a gear from the plurality of gears. No new matter has been added by way of these amendments, as support for these amendments may be found, for example, in paragraph [0030] of the present application. Claim 1 has been cancelled without prejudice or disclaimer.

Independent claim 11 has been amended to incorporate limitations of dependent claim 12. Limitations from claim 12 that correspond to the limitations added to claim 11 have been removed. Additionally, independent claim 11 has been amended to clarify that the transmission mechanism is driven rotationally by the motor and that the connector shaft is driven rotationally by the transmission mechanism. Independent claim 11 has been further amended to require that the transmission mechanism comprise a plurality of gears of different diameters which can move in the axial direction along the connector shaft, and that one of the plurality of

gears selectively meshes with the gear teeth of said connector shaft by a force of a spring. No new matter has been added by way of these amendments, as support for these amendments may be found, for example, in the claims and in paragraphs [0003]-[0004] and [0007] of the present application.

Claim 3 has been amended to correct the limitation “the mating teeth,” and claim 7 has been amended to correct the limitation “the other gear.” Additionally, claims 2, 3, and 11 have been amended to replace instances of “the axial direction” with “an axial direction,” and claims 4-6, 8-10, and 16 have been amended to correct minor grammatical errors. Further, claims 13-14 and 16-18 have been amended to be dependent from claim 11. No new matter has been added by way of these amendments.

Rejection(s) under 35 U.S.C § 112

Dependent claims 3 and 7-10 were rejected under 35 U.S.C. § 112 as being indefinite with regard to the limitation “the mating teeth” in claim 3 and the limitation “the other gear” in claim 7. Claims 3 and 7 have been amended to provide proper antecedent basis for limitations in these claims, and now distinctly claim the subject matter which the applicant regards as the invention. Accordingly, claims 3 and 7 as amended are no longer indefinite, and removal of the rejection is respectfully requested. Claims 8-10, which depend directly or indirectly from claim 7, are allowable for at least the same reasons.

Rejection(s) under 35 U.S.C § 102

Claims 1 and 11

Claims 1 and 11 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,537,264 issued to Schmid *et al.* (hereinafter “Schmid”). Independent claim 1 has been cancelled by this reply. Thus, this rejection is now moot with regard to claim 1.

Independent claim 11 has been amended by this reply. To the extent that this rejection may still apply to the amended claim, the rejection is respectfully traversed.

The present invention is directed to a hammer drill comprising a percussive member that reciprocates and applies a percussive force via a motion converter mechanism to a drill bit. The drill bit is held by a spindle that is rotated by a connector shaft. The present invention is further directed to a percussive force converter mechanism that modifies the percussive force from the percussive impact mechanism through modifying the reduction ratio between the motor and the connecting shaft. This makes it possible to adjust the percussive force according to the drill bit used (*see, e.g.*, paragraphs [0003]-[0004] of the Specification).

In embodiments of the present invention, both the rate of reciprocation of the motion converter mechanism 6 and the rotational speed of the spindle 7 are dependent upon the rotational speed of the connecting shaft 60. The ratio between the rotational speed of the motor 2 and the connecting shaft 60 is determined by one of a plurality of gears (*e.g.*, 3 or 4). A gear is selected from the plurality of gears through operation of the shifting switch 11 (*see, e.g.*, Figs. 2 and 3; paragraphs [0023] and [0030] of the Specification).

Schmid is directed to a device using a wobble-plate drive to convert the rotational movement of a motor to the reciprocal motion of a piston to impart an impact on a work surface (*see* Schmid, col. 1, lines 57-62; col. 2, lines 43-50). As seen with reference to Figures 2-4 of Schmid, shaft 10 is driven by motor 2. Gear 43 drives shaft 44, which in turn causes sleeve 30 to rotate. Schmid is completely silent with respect to selecting a gear from a plurality of gears to engage with a connector shaft, where the plurality of gears can move axially along the connector shaft, as required by independent claim 11 of the present application.

In view of the above, Schmid fails to show or suggest the present invention as recited in independent claim 11 as amended. Thus, independent claim 11 as amended is patentable over

Schmid. Dependent claims are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 1, 11-16, and 18

Claims 1, 11-16, and 18 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,418,766 issued to Grossman *et al.* (hereinafter "Grossman"). As discussed previously, independent claim 1 has been cancelled by this reply. Thus, this rejection is now moot with regard to claim 1. As discussed above, independent claim 11 has been amended by this reply to clarify the present invention recited. To the extent that this rejection may still apply to the amended claims, the rejection is respectfully traversed.

Grossman is directed to a hammer drill that with a cam member for selectively changing between drilling and hammer-drilling modes (*see* Grossman, abstract). As seen with reference to Figure 2 of Grossman, gears 34, 36, and 38 are driven by an intermediate shaft 68. Gear 36 is selected either to engage with one of gears 34, 38 or to engage the intermediate shaft 68. Gears 34 and 38 are constrained against axial movement by key 44 (*see*, Grossman, col. 3, line 57-col. col. 6, lines 7-22). Thus, Grossman does not disclose at least a transmission mechanism driven by a motor, where the transmission mechanism comprises a plurality of gears that can move in an axial direction of the connector shaft, where one of the gears is selected from the plurality of gears, as required by amended independent claim 11 of the present application.

In view of the above, Grossman fails to show or suggest the present invention as recited in independent claim 11 as amended. Thus, independent claim 11 as amended is patentable over Grossman. Dependent claims are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection(s) under 35 U.S.C § 103

Claims 2, 6, and 17 were rejected under 35 U.S.C. § 103(a) as being obvious over Grossman in view of Japan Patent No. 2595262 (hereinafter “the ‘262 Patent”). As discussed previously, claim 2 has been rewritten in independent form and amended to clarify the present invention, and independent claim 11 has been amended to clarify the present invention. To the extent that this rejection may still apply to the amended claims, the rejection is respectfully traversed.

As discussed previously, Grossman fails to disclose at least the limitations of amended independent claim 11 of the present invention. Accordingly, Grossman does not teach or suggest dependent claim 17. For the reasons set forth below, Grossman additionally fails to disclose at least the limitations of amended claim 2, which has been rewritten in independent form.

Amended independent claim 2 of the present application requires, in part, a percussive force converter mechanism driven rotationally by a motor and a connector shaft driven rotationally by the percussive force converter mechanism. Claim 2 further requires, in part, a plurality of gears that can move in an axial direction along the connector shaft and a shifting switch to select a gear from the plurality of gears to mesh with gear teeth equipped on the connector shaft by a force of a spring.

As discussed previously, Grossman is directed to a hammer drill that with a cam member for selectively changing between drilling and hammer-drilling modes. Grossman does not disclose a plurality of gears that can move in an axial direction of the connector shaft, where one of the gears is selected from the plurality of gears, as required by amended independent claim 2 of the present application. Accordingly, Grossman does not teach or suggest independent claim 2 or dependent claim 6.

The '262 Patent fails to disclose all the limitations of the present invention, or supply that which Grossman lacks. The '262 Patent is directed to a hammer drill where the number of revolutions of motor 2 is not lowered despite an increase in load (*see* the '262 Patent, Abstract). As seen with reference to Figure 1 of the '262 Patent, gears 62, 63 are not selectable; rather, under normal conditions, gear 62 engages with pinion 60. Gears 62, 63 retract against spring 66 when a load is applied to the tool 8. Gear 63 then engages with pinion 61 by the force of spring 66. Thus, a low speed high torque rotation is transmitted to the tool 8 when there is a load (*see* the '262 Patent, Abstract). Further, the gears of the '262 Patent are driven by intermediate shaft 23. Thus, the '262 Patent does not teach, or suggest selecting a gear from a plurality of gears that are driven rotationally by a motor, as required in part by independent claims 2 and 11.

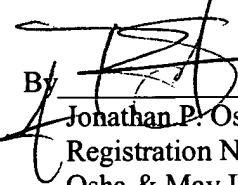
In view of the above, Grossman and the '262 Patent, whether taken separately or in combination, fail to show or suggest the present invention as recited in independent claims 2 and 11 as amended. Thus, independent claims 2 and 11 as amended are patentable over Grossman and the '262 Patent. Dependent claims are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Conclusion

Applicant believes this reply is fully responsive to all outstanding issues and places the present application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 03115/030001).

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Respectfully submitted,

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